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(54) CONFIRMING METHOD FOR RADIATION OR IRRADIATED AREA

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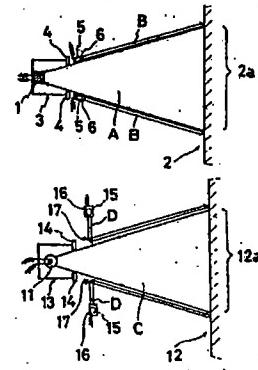
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PURPOSE: To confirm easily a radiation area and an irradiated area when a distance between a detector or a light source and an object changes by arranging visible rays approximately parallel to the external or internal edge of invisible radiations that are radiated from the objects or irradiated to the objects.

CONSTITUTION: A plurality of parallel visible rays B along the external edge of infrared radiations A radiated from a radiation area of an object 2 to be inspected toward an infrared detector 1 is irradiated from a light source 5 to an object 2 to be inspected. A radiation area 2a is confirmed directly from the reflected light. In this case when detector 1 or the object 2 travels to cause a change in the radiation area 2a, an irradiation position of the beam to the surface of the object follows the variation. On the other hand, a mirror 17 reflects approximately parallel visible radiations D from light source 15 in the direction of an object 12 in parallel to the external edge of infrared radiations C from a light source 11. The confirmation of an irradiation area 12a is performed by a visual observation of visible rays reflected from the object surface.



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Detailed description

Aiming System

1. Name of invention: Confirmation method of radiation or irradiated area

2. Area of the patent claim:

A method of confirming a radiation area of an object surface of an invisible beam radiated from the object surface, or a radiation area of an object surface of said invisible beam irradiated to the object surface comprising

irradiating a plurality of visible rays, leaving an appropriate space therebetween around said invisible beam, which goes straight to said object surface substantially parallel to external edge of said invisible beam in an external or internal side close to said edge; and

confirming said radiation area or irradiated area of said object surface of said invisible ray through reflected rays of said visible rays from said object surface.

3. Detailed explanation of the invention

This invention is related to the method of confirmation that makes clear the invisible area of radiation from the object and irradiated to the object.

The surface temperature of objects such as the human body or iron etc. can be measured using IR-detectors to detect the infrared energy radiated from the object. In this case it is a necessary condition of the measurement to define the measurement area which radiates the IR-energy from the object to the detector. Since in general the measurement area can be determined based on the structure of the detector and the distance to the object, one can confirm the area when one uses collimation type of optics. However this method of confirmation is based on the assumption that the distance of the detector and object is fixed, if the detector or object is moving and the distance between the detector and object is changing, e.g. such a case occurs when one uses a handytype of detector, the above mentioned method cannot make a confirmation of the radiation area.

This disadvantage is realized in both cases, when one measures infrared invisible energy from the object and also when one irradiates invisible light against the object. This problem occurs in a more general sense when one handles invisible light.

Therefore this invention presents a new method which simply confirms, by using the eyes, the radiation area from the object and also the irradiated area of the object, when the distance between detector and object or source of invisible light and object is changing.

The figures explain a preferred embodiment of the invention. Fig. 1 shows the method of confirming the radiation area of the object for instance when using IR detectors. The detector (1) detects the IR-radiation radiated from the object (2). (2a) is the infrared radiation area (measurement area) of the detector (1). (3) is the enclosure which includes the detector. (4) is the collimator which is set in front of the said enclosure. (5) is the source which radiates the visible light, for example a small lamp. The small lamp is located so as to be close to the outer zone of the IR area which radiates from (2a). Also the light source (5) can have a cylinder type of cover which gives parallel visible light that can radiate to the front through the lens or collimator. And also the direction of this light source is to be adjusted to become parallel to the outside zone of the invisible radiation. The lamp source (5) may be installed in multiple numbers with some reasonable distances between them to give a more clear indication of the radiation area (2a).

If one uses this type of preferred embodiment, one can define the radiation area (2a) using the angle of incidence which is determined by the collimator (4) and the distance between detector (1) and object (2). However if one does not take this definition one can also confirm the radiation area (2a) more easily because one can have multiple visible sources which radiate to the object in parallel to the outside of the infrared beam, which radiates from the area (2a) to the detector (1), and one can confirm the radiation area (2a) based on the reflected light projected from the multiple visible sources. If one uses this confirmation method one can confirm very accurately the radiation area because if detector (1) or object (2) is moving, which changes the radiation area (2a), this visible source can follow the change in distance between the detector and object.

Fig. 3 shows the method of confirmation of the irradiated area when one irradiates an invisible source, e.g. IR-light, to the object. (11) is the IR light source. (12) is the object which receives radiation from the invisible source (11). (12a) is the irradiated area. (13) is the enclosure which includes the said light source (11). (14) is the collimator (not only collimators, one can also use a convex or concave lens) (15) is the light source which radiates the visible light. In this case one can also use a small lamp and can also install the cover which holds the collimator or the lens and which radiates the parallel visible ray to the front. (17) is a mirror which reflects light radiated from the light source (15) parallel to the outside of the infrared beam.

Therefore one can confirm the irradiated area (12a) because one can see the reflection of the visible ray from the surface of the object. This is the same method which was explained previously.

In the above two preferred embodiments multiple visible light rays are set parallel along the outside of the invisible beam. But one can locate visible rays also parallel along the inside of the invisible beam. And also one can locate several visible rays along the outside and other visible rays along the inside of the beam. This method of confirmation of the irradiated area and radiation area related to this invention is explained in all the above paragraphs; one radiates the multiple visible rays parallel along the outside or the inside of the irradiated or radiation area of the object, and one can easily confirm the invisible irradiated or radiation area from the reflection of these visible rays from the target surface. Therefore one can confirm by ones eyes the said invisible irradiated area and radiation area. This invention gives a significant effect to confirm the area very accurately when the distance between detector and object or light source and object changes i.e. the irradiation or radiation area is changing.